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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,700	08/28/2001	Toshiki Tanaka	826.1746	4440

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EXAMINER	
SOMMER, ANDREW R	
ART UNIT	PAPER NUMBER
3663	

DATE MAILED: 11/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	09/939,700.	TANAKA ET AL.	
	Examiner	Art Unit	
	Andrew R Sommer	3663	

-- The MAILING DATE of this communication appears on the cover she t with th correspond nc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 November 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4,5,11-13,15 and 16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4,5,11-13,15 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group II (claims 4-5, 11-13, 15 and 16) in Paper No. 5 is acknowledged. Claims 1-3, 6-10 and 14 have been cancelled by Applicant's amendment in paper number 5.

Drawings

Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13, 15 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 is rejected because it cannot be determined how the average characteristics of the multiplexer "comprised by a predetermined number of Raman amplifiers" is to be interpreted. A characteristic cannot comprise an actual amplifier, as claimed. This appears to be a mere grammatical error. However, this limitation (the

phrase in this claim) will be ignored as totally incomprehensible for the purposes of this examination.

Claims 15 and 16 are rejected because they state that the "power of teach of the plurality of the pump lights in the plurality of Raman amplifiers is detected by the first optical terminal station." This is indefinite because it fails to distinctly claim what the Applicants regard as their invention. For example, Figure 21 shows that the power of the pumping lights for each of the Raman amplifiers is detected using backfacet monitors at the location of the control unit, not by the first terminal station. This information is then relayed to the terminal station, as illustrated therein. Thus, the terminal station does not directly detect the optical power of the pump lights, but merely relies on an inquiry to the individual Raman pump light controllers to relay the operating conditions of the pumping light to the terminal station. Thus, Applicant's method as claimed seems to indicate that the terminal station is performing the detecting function, not the pumping monitors, at each Raman amplifier, as disclosed. This renders the claims indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 4-5 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Namiki et al. (2001/0050802) (hereafter "Namiki").

Regarding claims 4 and 5, Namiki teaches an optical transmission system where a plurality of Raman amplifiers (see [0019]) are positioned on an optical transmission line, and each of the Raman amplifiers uses a plurality of pump lights (see [0058]), wherein when a power of a pump light having a first wavelength among the plurality of pump lights drops to a predetermined level or lower (Namiki calls this condition "failure") in a first Raman amplifier among the plurality of Raman amplifiers, power of a pump light having the first wavelength or a wavelength that is substantially the same as the first wavelength is raised in one or some of the plurality of Raman amplifiers other than the first Raman amplifier (see [0069], [0072]), or (with respect to claim 5), the poer of a pump light having a wavelength adjacent to the first wavelength is raised in the first Raman amplifier (see [0169], describing how when pump 8 fails, pump 7 is activated to compensate for the failure).

Regarding claim 13, Namiki teaches that each of the Raman amplifiers in the system can be Raman amplifiers according to the disclosure therein. Furthermore, Namiki teaches that the multiplexers are selected and arranged so that an average characteristic of the multiplexers becomes a predetermined characteristic ever predetermined number of Raman amplifiers; and power of the pumping light is raised in the predetermined number of Raman amplifiers. The power is raised to ensure that the target performance is met in the Namiki amplifier. This is the goal of the controller, and

the purpose of the Namiki control system. Additionally, it is inherent that the multiplexers have an average characteristic that is predetermined because it is necessary for one to select the multiplexers to use in the system, which would inherently entail preselecting the characteristics of the multiplexers. Thus, because no matter how many amplifiers are present in the system, be it two or one hundred, the mutliplexers would always have a predetermined characteristic, based on the fact that the system must be created before it is used, and therefore some one or thing must select the components to use. By selecting the multiplexers, there is an inherent choice of the multiplexer characteristics, which will give

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Namiki in view of Foursa (2002/0075560) (hereafter "Foursa").

Regarding claim 11, Namiki does not teach that the transmission line accommodates "m" optical fibers; and "m" pumping lights having different wavelengths are multiplexed in each of the Raman amplifiers, and a multiplexed pump light is respectively provided to the "m" optical fibers. Such is well known in the art and is shown in the Foursa publication. See for example, Fig. 4; paragraph [0039]. It would have been obvious to one of ordinary skill in the art at the time of invention by Applicant

to employ the pumping configuration of Foursa to the amplifier of Namiki because such would enable a designer to increase the system bandwidth by, for example (as shown in Fig. 4 of the Foursa reference), four times.

Regarding claim 12, Namiki does teach a polarization coupled light is obtained by polarization coupling two pump lights, which is further multiplexed by a multiplexer. Namiki does not teach that the Raman amplifiers comprise a multiplexer having both "m" input ports and "m" output ports. This is taught by the Foursa reference. See the discussion of claim 11, above, which is hereby incorporated by reference in its entirety.

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Namiki in view of Wu et al. ('921) (hereafter "Wu").

Regarding claims 15 and 16, the teachings of Namiki have been discussed above with respect to claims 4 and 5, which is hereby incorporated by reference in its entirety. Namiki teaches that the control unit may send various operating parameters to the network control system. See, e.g., Figs. 5, 10. Namiki does not teach that the power of each of the pump lights in the plurality of the Raman amplifiers is detected by the first optical terminal station. This limitation has been rejected as being indefinite for failing to distinctly claim what the applicant regards as his or her invention, and will be interpreted in light of the disclosure. Wu teaches that information on the pump powers, which are inherently determined by back facet monitors (see Fig. 7, 80), may be relayed over a telemetry channel to a network control and management station, which is located at a terminal station. See, e.g., column 6, line 54 to column 8, line 12. It would have

been obvious to one of ordinary skill in the art at the time of invention by Applicant to modify Namiki to include a controller that communicated the detected pump powers over to a first terminal station because such is well known in the art and allows for more effective system monitoring and further allows the pumps of adjacent amplifiers to be controlled in the event of a pump failure, as described in the Namiki reference.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ghera et al ('922) teaches a system to characterize a Raman amplifier by *inter alia*, characterizing the Raman pumping power; Friedrich ('715) (same); Lee et al. ('394) teaches a high powered Raman pumping unit; Grubb et al. ('922) teaches a Raman amplifier with pump power controller; Cornwell, Jr. et al. ('383) (same); Kikuchi et al. (2002/0145796) teaches a system for upgrading the number of Raman pump lights being used in the Raman amplifier; Gerish et al. (2002/0093729) teaches a controller that may be used in a Raman amplifier.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew R Sommer whose telephone number is (703) 605-4274. The examiner can normally be reached on M - F 7:00 - 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (703) 305-8233. The fax phone numbers

for the organization where this application or proceeding is assigned are (703) 872-9326 for regular communications and (703) 872-9327 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

ars ARS
November 18, 2002

THOMAS G. BLACK
SUPERVISORY PATENT EXAMINER
GROUP 3600